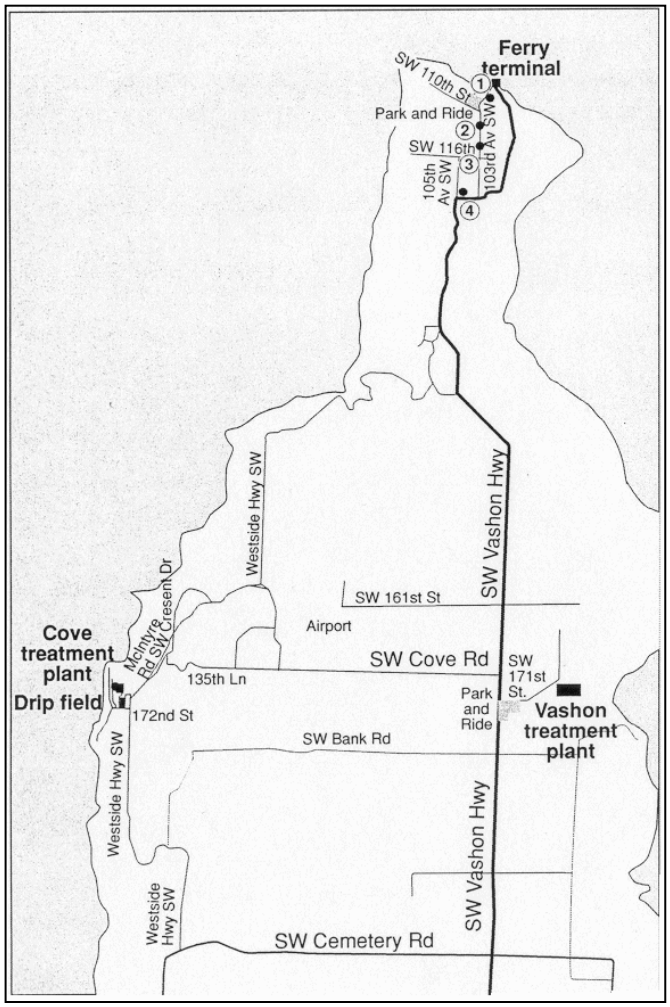
FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST-7446

KING COUNTY – BEULAH PARK AND COVE



This fact sheet is a companion document to the draft State Waste Discharge Permit No. ST-7446. The Department of Ecology (the Department) is proposing to issue this permit, which will allow discharge of wastewater to waters of the State of Washington. This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions. The fact sheet and draft permit are available for review (see *Appendix A--Public Involvement* for more detail on the Public Notice procedures).

GENERAL INFORMATION	
Applicant	Beulah Park and Cove Treatment Facility King County: KCWTD, KC DNRP
Facility Name and Address	Beulah Park and Cove, 1350 SW 172nd Street, Vashon, WA 98070
Type of Treatment System	Septic tanks, recirculating sand filters, spin filters, UV disinfection, drip field
Discharge Location	Latitude: 47° 27' 14" N Longitude: -122° 30' 39" W
Legal Description of Application Area	Owner: KC Dept. of Natural Resources and Parks - T23, R02, S26
Contact at Facility	Name: Rick Butler Telephone #: 206-684-2400
Responsible Official	Name: Don Theiler Title: Director, WTD, DNRP Address: 201 S. Jackson Street, Seattle, WA 98104-3844 Telephone #: 206-684-1280

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INTRODUCTION

Washington State law (RCW 90.48.080 and 90.48.162) requires that a permit be issued before discharge of wastewater to waters of the state is allowed. Regulations adopted by the State include procedures for issuing permits (Chapter 173-216 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC) and water quality criteria for ground waters (Chapter 173-200 WAC). They also establish the basis for effluent limitations and other requirements which are to be included in the permit.

This fact sheet and draft permit are available for review by interested persons as described in *Appendix A--Public Involvement Information.*

The fact sheet and draft permit have been reviewed by the Northwest Regional Office of the Washington State Department of Health and by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Changes to the permit will be addressed in *Appendix D--Response to Comments.*

BACKGROUND INFORMATION

DESCRIPTION OF THE COLLECTION AND TREATMENT SYSTEM

Beulah Park and Cove wastewater treatment system is located on Vashon Island in King County and is owned by King County Department of Natural Resources and Parks. It serves 60.5 units consisting of primarily single-family residences in two adjacent communities. Cove is a single row of mostly walk-in beachfront homes at the foot of a steep bluff, and Beulah Park is an upland neighborhood of small lots bisected by a stream corridor. Design annual average daily flow for the facility is 7,260 gpd, and maximum month average daily flow is 14,520. The effluent is land applied on a 28,000 ft^2 grass field also owned by King County Department of Natural Resources and Parks. This facility has no industrial users.

HISTORY

The Beulah Park and Cove wastewater collection and treatment system began operation in November 2001. Prior to the construction of this system, the Washington State Department of Health (DOH) declared the Beulah Park and Cove area a “severe public health hazard area” based on sanitary surveys of the individual property on-site sewage systems. The permit associated with this fact sheet will be the facility’s first waste discharge permit issued by the Department of Ecology.

COLLECTION SYSTEM STATUS

The collection system was built in 2001 and consists of vacuum chambers, a vacuum sewer manifold, a vacuum station, a pump station and a force main. There are currently 19 upland vacuum chambers, 8 more are planned at Cove to be located behind the seawall along the shoreline. Each chamber contains a sump and an upper chamber that houses a vacuum valve. When sewage from the gravity sewer flows into the sump and the level rises, the interface valve opens, and the sump is emptied.

A branching vacuum manifold system lies between the Beulah Park upland vacuum chambers and the vacuum station. An additional vacuum manifold is planned at Cove to connect the beach vacuum chambers to the vacuum station.

The vacuum station is located in a vault at the end of SW 168th St near the Puget Sound Energy cable-loading site. The station contains vacuum pumps, sewage pumps, and a collection tank. Sewage is pumped from the collection tank into the pump station.

The pump station transfers sewage from the vacuum station to the wastewater treatment facility. The two submersible grinder pumps are each capable of handling the designed flow. There are about 550 feet of pipe connecting the pump station to the treatment plant.

TREATMENT PROCESSES

The treatment facility, shown in Appendix E, was designed with two treatment trains. Only one train is required for normal operation; the capacity of a single train is 7,260 gpd. Each train consists of septic tanks, recirculating sand filters, effluent filtration, and ultraviolet disinfection. Primary treatment (removal of floating and settleable solids) is handled in the anaerobic environment of the septic tanks. Secondary treatment (removal of most of the organic matter) occurs in the aerobic environment of the recirculating sand filters. 80% of the effluent leaving the sand filter is recirculated to the septic tanks to increase contact time and to produce a more consistent BOD loading rate to the sand filters. Recirculation also provides a more consistent daily flow pattern. The 20% of the effluent that is not recirculated is pumped through spin filters and UV disinfection before being disposed of in a subsurface drip absorption system. The effluent filters remove particles that might clog the drip system. UV disinfection is used to reduce bacterial levels to acceptable levels.

DISTRIBUTION SYSTEM (DRIP FIELD)

The effluent is distributed via an effluent drip absorption system on 28,000 ft^2 of land that is owned by King County Department of Natural Resources and Parks. The effluent is pumped from the UV system uphill 90 feet through a 1,300 foot transmission line to the Beulah Park drip field. A distribution valve spreads it to four different zones. The effluent pump timers determine the dosing cycles. The wastewater percolates to subsurface soils through shallow drip laterals with flow emitters spaced at regular intervals. An effluent return line is provided for drip field line fluid flushing. The system is equipped with air/vacuum release valves, check valves, and pressure regulating valves. The drip field is monitored for ponding on a monthly basis.

During an inspection conducted on February 23, 2004 it was observed that minor ponding was occurring in a few spots on the drip field. This was during a particularly wet period, however ponding should be avoided at all times.

RESIDUAL SOLIDS

The facility removes solids in the septic tanks, the recirculating sand filters, and the final spin filter. The septic tanks are pumped as needed, as determined by routine inspection. Septic tank scum is pumped with the solids. The spin filters are self-cleaning; collected solids are flushed back to the head of the septic tank system. Solids are hauled to King County's South Treatment Plant for further treatment.

GROUND WATER

The permit accompanying this fact sheet proposes that ground water monitoring be performed twice per year for several parameters; the parameter of greatest concern is nitrate. Observations of ground water level and ponding are also required on a monthly basis. The up-gradient monitoring well already exists just south of the drip field. A second ground water monitoring well down-gradient, or north, is required within twelve months of permit effective date.

PERMIT STATUS

This is a new facility. An application for a permit was submitted to the Department on June 30, 2004 and accepted by the Department on February 18, 2005.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

This is the first permit for this facility; therefore there is no compliance history.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the permit application. There is limited data available because the facility was not previously permitted and monitoring did not occur on a regular basis. Table 1 summarizes the wastewater characterization based on this limited data.

Table 1. Wastewater Effluent Characterization –
(Based on very limited data reported in permit application)

Parameter	Concentration
BOD - Average	3.3 mg/L
TSS - Average	5.2 mg/L
Fecal Coliform	2-170 /100 mL
Ammonia – N	0.096 mg/L
Nitrate – N	34 mg/L
Nitrite – N	0.88 mg/L

(Based on limited data, reported in permit application)

PROPOSED PERMIT LIMITATIONS

State regulations require that limitations set forth in a waste discharge permit must be either technology- or water quality-based. Wastewater must be treated using all known, available, and reasonable treatment (AKART) and not pollute the waters of the State. The minimum requirements to demonstrate compliance with the AKART standard are derived from the *Water Reclamation and Reuse Standards*, the *Design Criteria for Municipal Wastewater Land Treatment*, and Chapter 173-221 WAC.

The permit also includes limitations on the quantity and quality of the wastewater applied to the drip field. These limitations have been determined to protect the quality of the ground water. The approved facility plan includes specific design criteria for this facility. Water quality-based limitations are based upon compliance with the Ground Water Quality Standards (Chapter 173-200 WAC) and Drinking Water Quality Standards.

Applicable water quality standards differ between land application systems and land treatment systems. Land application systems must meet the stringent requirements for reclaimed water projects as outlined in chapter 90.46 RCW (*Washington State DOH, 1994*). Land treatment systems must produce wastewater at a quality equal to or better than effluent from a waste stabilization pond (as defined in WAC 173-221) with additional disinfection requirements resulting in no more than 200 fecal coliform per 100 milliliters in any one sample. Land treatment systems are defined as systems operated to treat wastewater through the use of crops and irrigation methods (*Washington State DOH, 1994)*. The system at Beulah Park/Cove is a cross between a land application and land treatment system. There is expected to be some nutrient uptake in the sod planted in the drain field, but this uptake may be minimal since the drip lines are 10 inches deep in the soil. To monitor the nutrient uptake by the sod crop on the drip field, ground water monitoring will be required for nitrates and total dissolved solids, but limits are not instated at this time. Technology-based limits are applied for TSS and BOD to assess the treatment facility performance. Each of these types of limits is described in more detail below.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

All waste discharge permits issued by the Department must specify conditions requiring available and reasonable methods of prevention, control, and treatment of discharges to waters of the state (WAC 173-216-110). The technology-based effluent limits shown in Table 2 are necessary to satisfy the requirement for AKART.

The technology-based mass limits shown in Table 2 are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

The monthly effluent mass limit (lb/day) is determined from the following calculation:

Monthly mass limit (lb/day) = max monthly design flow (MGD) x Conc. limit (mg/L) x 8.34 (conversion factor)
= 0.01452 MGD x 30 mg/L x 8.34
= 3.63 lbs/day

The weekly average effluent mass limit is calculated as:

Weekly Ave mass limit (lb/day) = 1.5 x monthly mass limit
= 1.5 x 3.63 lbs/day = 5.45 lbs/day

Table 2. Technology-based Effluent Limits

Parameter	Limit
pH	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD_5 (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
BOD_5 (mass)	Ave. Monthly Limit = 3.63 lb/day Ave. Weekly Limit = 5.45 lb/day
TSS (mass)	Ave. Monthly Limit = 3.63 lb/day Ave. Weekly Limit = 5.45 lb/day

GROUND WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the Ground Water Quality Standards. Drinking water is the beneficial use generally requiring the highest quality of ground water. Providing protection to the level of drinking water standards will protect a great variety of existing and future beneficial uses. Applicable ground water criteria as defined in Chapter 173-200 WAC and in RCW 90.48.520 are summarized in Table 3. While there are no groundwater limits instated in this permit, however ground water monitoring is required to assess the impact on groundwater quality. Any ground water concerns will be addressed in the subsequent permit. The discharges authorized by this proposed permit are not expected to interfere with beneficial uses.

Table 3. Ground Water Quality Criteria

Parameter	Concentration
Total Coliform Bacteria	1 Colony/ 100 mL
Total Dissolved Solids	500 mg/L
Chloride	250 mg/L
Fluoride	4 mg/L
Sulfate	250 mg/L
Nitrate - N	10 mg/L
pH	6.5 to 8.5 standard units
Total Manganese	0.05 mg/L
Total Iron	0.3 mg/L
Total Lead	0.05 mg/L
Total Zinc	5.0 mg/L
Toxics	No toxics in toxic amounts

RESULTING FACILITY EFFLUENT LIMITATIONS

The effluent limits for this discharger will be based on technology-based limits. Technology-based limits will be used for BOD, TSS, and fecal coliform. These limits are established primarily to monitor the performance of and loading to the wastewater treatment facility. Also, low TSS levels are required for the UV and drip disposal systems to work effectively. Water quality-based limitations will be instated to protect the aquifer ground water underneath the disposal field. The primary pollutants of concern in domestic wastewater are the nitrogen species: ammonia, nitrate, and nitrite. The application rate of these constituents will be monitored and the impacts on local ground water will be observed throughout the duration of this permit cycle. The need to control the discharge of nitrogen species and the drip field capacity will be addressed in the next permit.

The resultant effluent limits for Beulah Park / Cove facility are shown in Table 4.

Table 4. Beulah Park / Cove Effluent Limitations

Parameter	Concentration
BOD, average monthly	30/45 mg/L
TSS, average monthly	30/45 mg/L
Fecal Coliform	200/400 colonies/ 100 mL
pH	6.5 to 8.5 standard units

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, that ground water criteria are not violated, and that effluent limitations are being achieved (WAC 173-216-110).

INFLUENT AND EFFLUENT MONITORING

The monitoring and testing schedule is detailed in the proposed permit under Condition S2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, significance of pollutants, and cost of monitoring.

Monitoring for nitrate+nitrite is being required to further characterize the effluent. This pollutant could have a significant impact on the quality of the ground water.

GROUND WATER MONITORING

The monitoring of ground water at the site is required in accordance with the Ground Water Quality Standards, Chapter 173-200 WAC, and the monitoring schedule is detailed in the proposed permit under Condition S2.B. The Department has determined that this discharge has a potential to pollute the ground water, therefore the Permittee is required to evaluate the impacts on ground water quality. Monitoring of the ground water at the site boundaries and within the site is an integral component of such an evaluation. One ground water monitoring already exists south (up-gradient) of the dripfield, and the Permittee shall install another monitoring well north

(downgradient) of the dripfield. Sampling in both wells shall commence within twelve months of permit effective date. This permit requires ground water sampling two times per year.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-216-110).

FACILITY LOADING

The design criteria for this treatment facility are taken from the November 1993 Sewage Facilities Plan prepared by Barrett Consulting Group, and the more recently updated Operations and Maintenance Manual dated August 2002. The design criteria for the wastewater treatment facility are as follows:

Average flow for the maximum month:	14,520 gpd
BOD_5 loading for maximum month:	51.5 lb/day
TSS loading for maximum month:	45.4 lb/day

The permit requires the Permittee to maintain adequate capacity to treat the flows and waste loading to the treatment plant (WAC 173-216-110[4]), as well as maintain adequate capacity for proper disposal. The Permittee is required to submit an engineering report when the plant or drip field reaches 85% of its flow or loading capacity. For significant new discharges, the permit requires a new application and an engineering report (WAC 173-216-110[5]).

OPERATIONS AND MAINTENANCE

The proposed permit contains condition S5 as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

RESIDUAL SOLIDS HANDLING

To prevent water pollution the Permittee is required in permit condition S6. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503 and by Ecology under Chapter 70.95J RCW and Chapter 173-208 WAC. The disposal of other solid waste is under the jurisdiction of the local health district.

Requirements for monitoring sewage sludge and recordkeeping are included in this permit. This information will by used by Ecology to develop or update local limits and is also required under 40 CFR 503.

PRETREATMENT

This facility shall have no industrial users. However, WAC 173-216-110 requires that the list of prohibitions in WAC 173-216-060 be included in the permit.

Federal pretreatment requirements in 40 CFR 403 and Sections 307(b) and 308 of the Clean Water Act apply to this facility. Therefore notification to the Department is required when pretreatment prohibitions are violated and when new sources of commercial or industrial wastewater discharge are added to its system.

GENERAL CONDITIONS

General Conditions are based directly on state laws and regulations and have been standardized for all industrial waste discharge to ground water permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending, or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to submit written notice of significant increases in the amount or nature of discharges into the sewer system tributary to the permitted facility. Condition G6 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G7 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Condition G8 requires application for permit renewal 60 days prior to the expiration of the permit. Condition G9 requires the payment of permit fees. Condition G10 describes the penalties for violating permit conditions.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, and to protect human health and the beneficial uses of waters of the State of Washington. The Department proposes that the permit be issued for five years.

REFERENCES FOR TEXT

Faulkner, S.P., Patrick Jr., W.H., Gambrell, R.P., May-June, 1989. Field Techniques for Measuring Wetland Soil Parameters, Soil Science Society of America Journal, Vol. 53, No.3.

Washington State Department of Health, 1994. Design Criteria for Municipal Wastewater Land Treatment Systems for Public Health Protection. http://www.ecy.wa.gov/programs/wq/reclaim/municipal_land_treatment_design_criteria.pdf

Washington State Department of Ecology, 1993. Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems, Ecology Publication # 93-36. 20 pp.

Washington State Department of Ecology and Department of Health, 1997. Water Reclamation and Reuse Standards, Ecology Publication # 97-23. 73 pp. http://www.ecy.wa.gov/programs/wq/reclaim/standards.pdf

Washington State Department of Ecology:
Laws and Regulations: http://www.ecy.wa.gov/laws-rules/index.html
Permit and Wastewater Related Information:
(http://www.ecy.wa.gov/programs/wq/wastewater/index.html

Washington State Department of Ecology, 1996. Implementation Guidance for the Ground Water Quality Standards, Ecology Publication # 96-02.

Washington State University, November, 1981. Laboratory Procedures - Soil Testing Laboratory. 38 pp.

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to issue a permit to the applicant listed on page one of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

The Department will publish a Public Notice of Application (PNOA) and Draft (PNOD) on August 31 and September 7, 2005 in The Vashon Island Beachcomber to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Northwest Regional Office
3190 160th Ave SE
Bellevue, WA 98008

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-216-100). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing.

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (206)649-7201, or by writing to the address listed above.

This permit and fact sheet were written by Alison Evans.

APPENDIX B--GLOSSARY

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation--The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of the collection or treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Distribution Uniformity--The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

Engineering Report--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Soil Scientist--An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops

or soils, and have 5,3,or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Coliform Bacteria--A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

Total Dissolved Solids--That portion of total solids in water or wastewater that passes through a specific filter.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent pollution of the receiving water.

APPENDIX C--RESPONSE TO COMMENTS

The following substantial comments were submitted by King County during the public comment period:

Comment: Page 7, Ground Water Monitoring 1st Para and Table 3 - This section states that groundwater shall be sampled "... according to the parameter list and schedule shown in Table 3 as soon as the wells are installed and no later than 12 months after issuance of this permit." Table 3 indicates a sampling frequency of 2/year, Jan & July, for grab sample collection and analysis, and Section S8 notes that groundwater sampling is required "... two (2) times per year in January and July in each well." One well is already in place so sampling will begin in January 2006 for that well. Please clarify if the sampling of the other well should begin when installed, or at the next subsequent Jan or July sampling period.

Response: The permit was modified as follows:
Ground water in the vicinity of the drip field shall be monitored for common domestic wastewater contaminants. It is believed that the ground water runs under the drip field north towards the adjacent creek. One ground water monitoring well already exists up-gradient (south) of the drip field. Another ground water monitoring well shall be installed down-gradient (north) of the drip field within twelve months of the issuance of this permit. The ground water shall be sampled from these wells according to the parameter list and schedule shown in Table 3. Sampling in the up-gradient well shall commence January 2006, and sampling in the down-gradient well shall commence the first January or July after the well is installed.

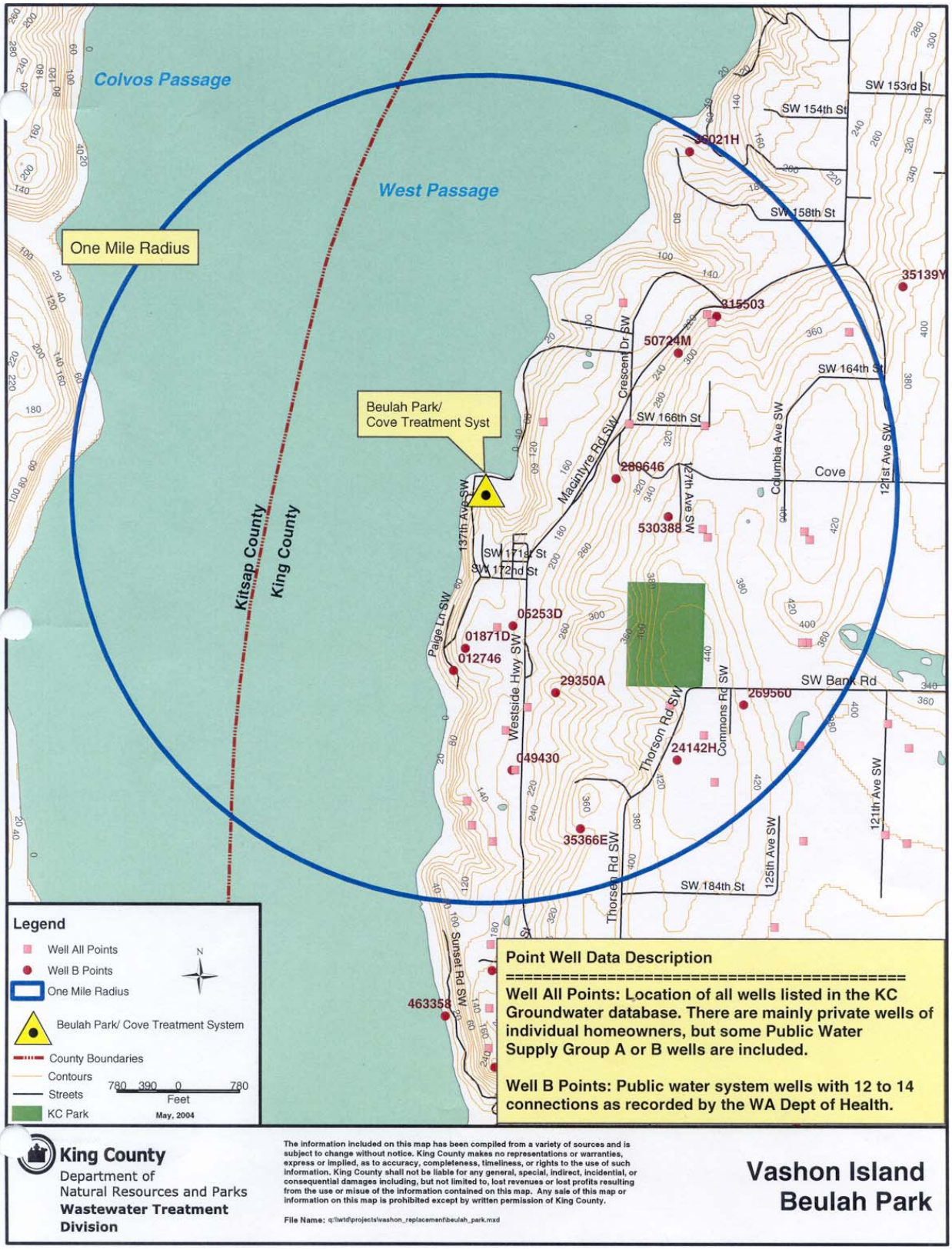
Comment: Page 9 of 18 - 1st para. of S3.E. - this paragraph mentions conditions we would be responsible for and includes '...such as collection system overflows...'. Since King County is not responsible and has not jurisdiction for the collection system other than a portion associated with some pump stations, we recommend that this section be modified to read something like "...overflows in the collection system under the jurisdiction of King County..." .

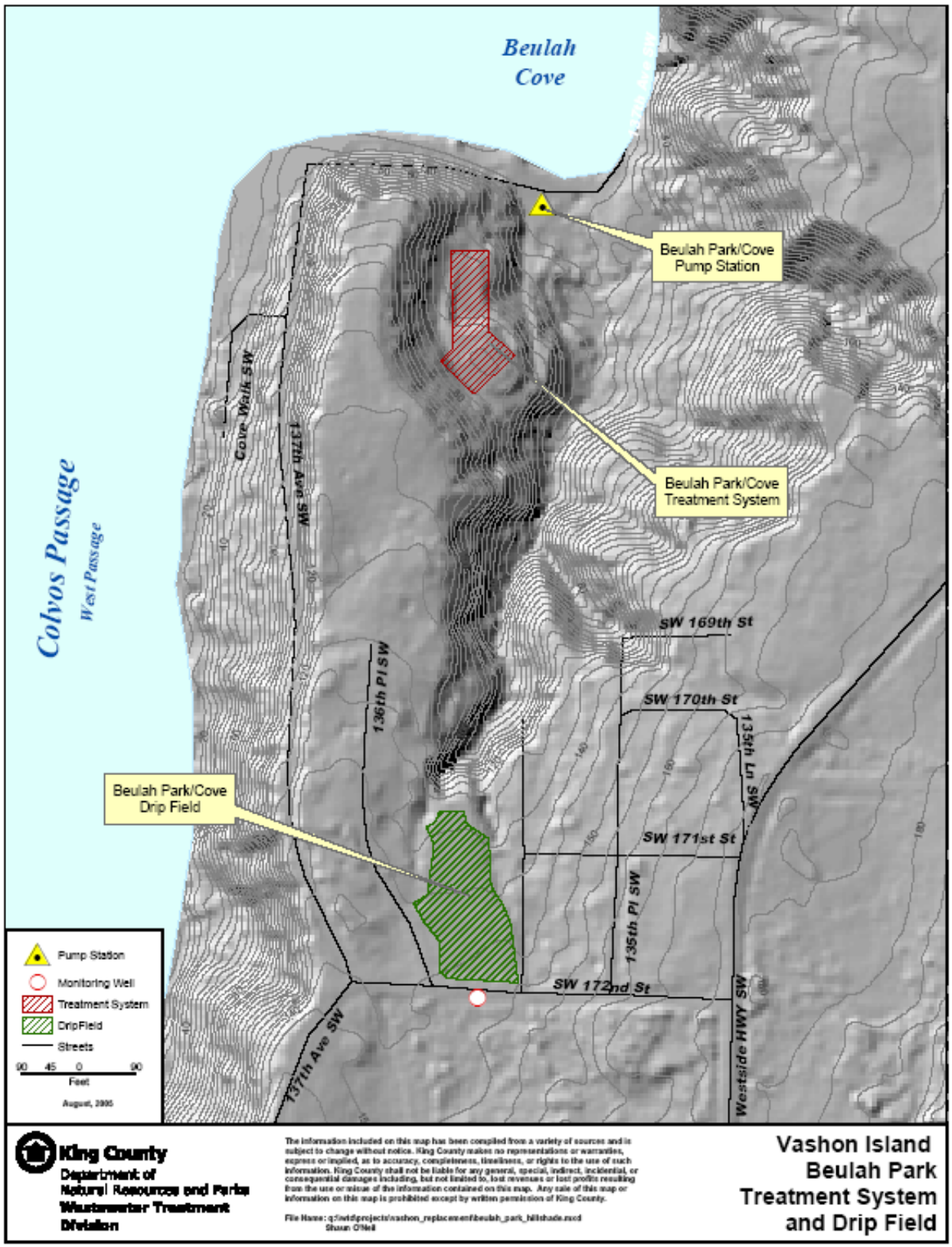
Response: The permit was modified as requested.

Comment: Page 15 of 18 - S7.ix. - since these scenarios are not relevant or applicable to the Vashon system or Treatment plant, we request that this section be deleted.

Response: The permit was modified as requested.

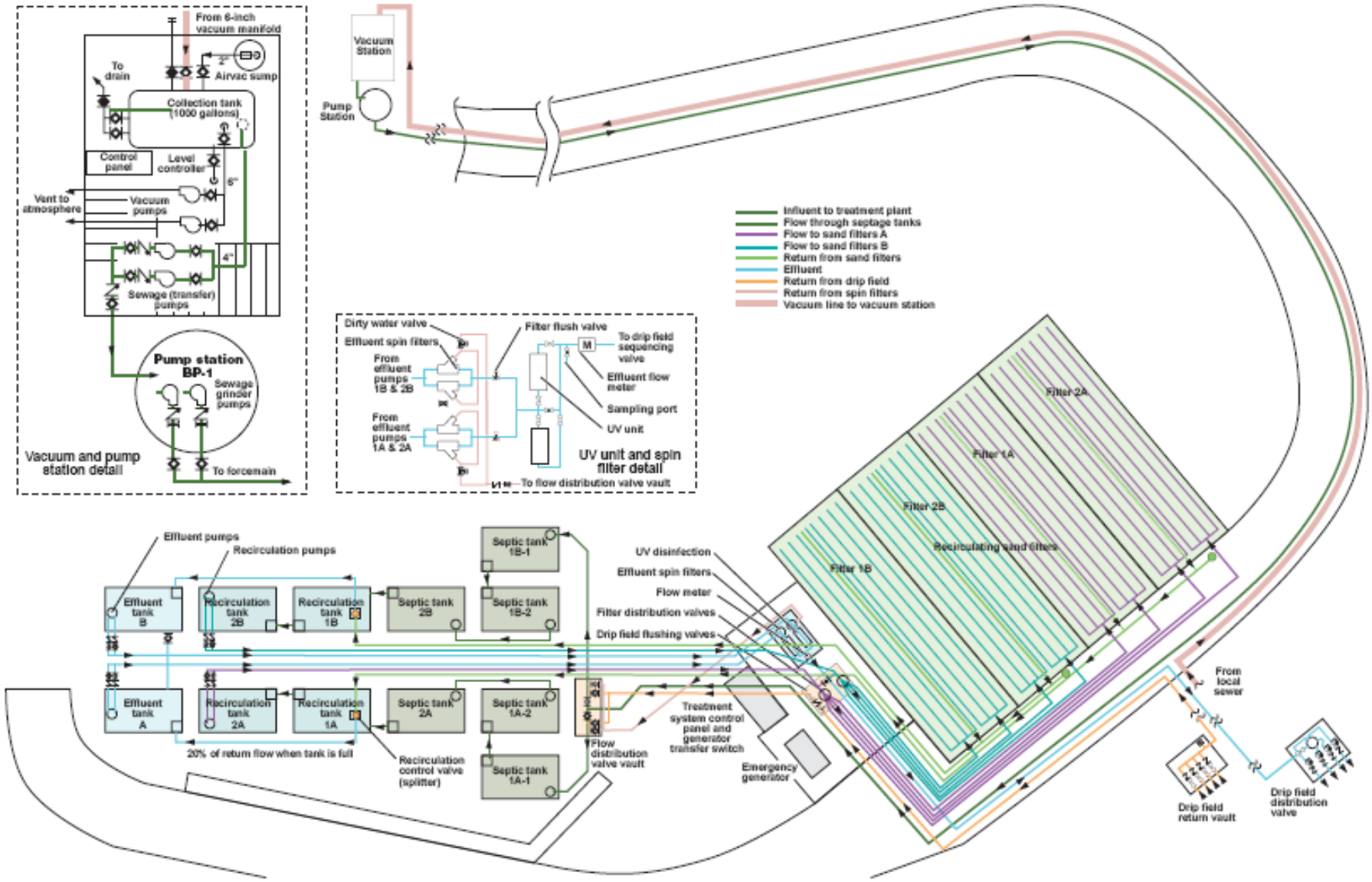
APPENDIX D—TOPOGRAPHIC MAPS




Beulah Cove
Beulah Park/Cove Pump Station
Beulah Park/Cove Treatment System
Beulah Park/Cove Drip Field
Colvos Passage
West Passage
Cove Walk SW
137th Ave SW
136th Pl SW
135th Pl SW
135th Ln SW
SW 169th St
SW 170th St
SW 171st St
SW 172nd St
Westside HWY SW
Pump Station
Monitoring Well
Treatment System
DripField
Streets
90 45 0 90
Feet
August, 2005
King County
Department of Natural Resources and Parks
Wastewater Treatment Division
The information included on this map has been compiled from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. King County shall not be liable for any general, special, indirect, incidential, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.
File Name: q:\wtd\projects\vashon_replacement\beulah_park_hillshade.mxd
Shaun O'Neil
Vashon Island
Beulah Park
Treatment System
and Drip Field

APPENDIX E--LAYOUT OF TREATMENT FACILITY

Buehla Park and Cove P&ID



APPENDIX F—EFFLUENT MONITORING DATA, 2004

Parameter	Concentration
BOD - Average	3.3 mg/L
TSS - Average	5.2 mg/L
Fecal Coliform	2-170 /100 mL
Ammonia – N	0.096 mg/L
Nitrate	34 mg/L
Nitrite	0.88 mg/L

(Based on very limited data reported in permit application)

APPENDIX G— MAP OF LOCAL DRINKING WELLS